

Geologically Speaking



A Michigan Section AIPG Publication

Inside This Issue:

AIPG/MBGS Field Trip

Geology in Michigan: That Sinking Feeling

What Labs Wish You Knew

Regulatory Roundup



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ENVIRONMENTAL

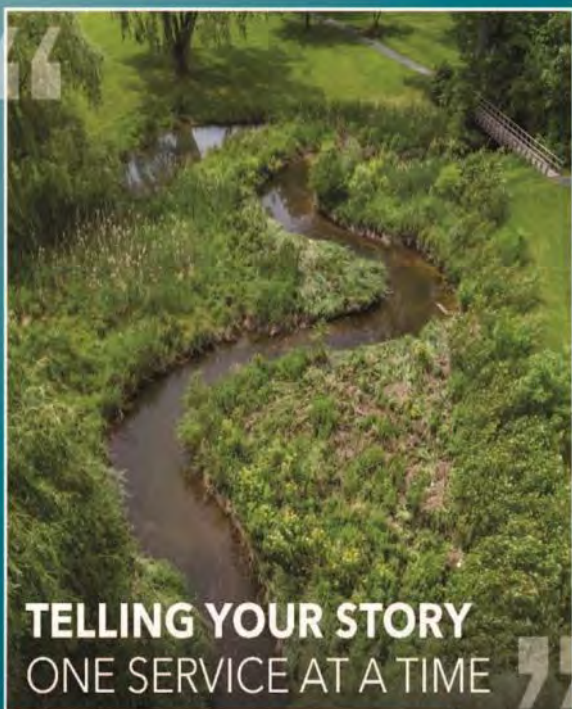


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Front Cover: Construction of the new lock at Sault Ste. Marie, Michigan, July 2025. The construction of the lock exposes the 1.0 Ga Jacobsville Sandstone, which exhibits its usual reduction spots and streaks as well as ripples and cross-bedding. Some of the reduction spots exhibit bullseye patterns resulting from bacteria. The bridge to Canada is visible in the background. Photo credit: Sara Pearson.

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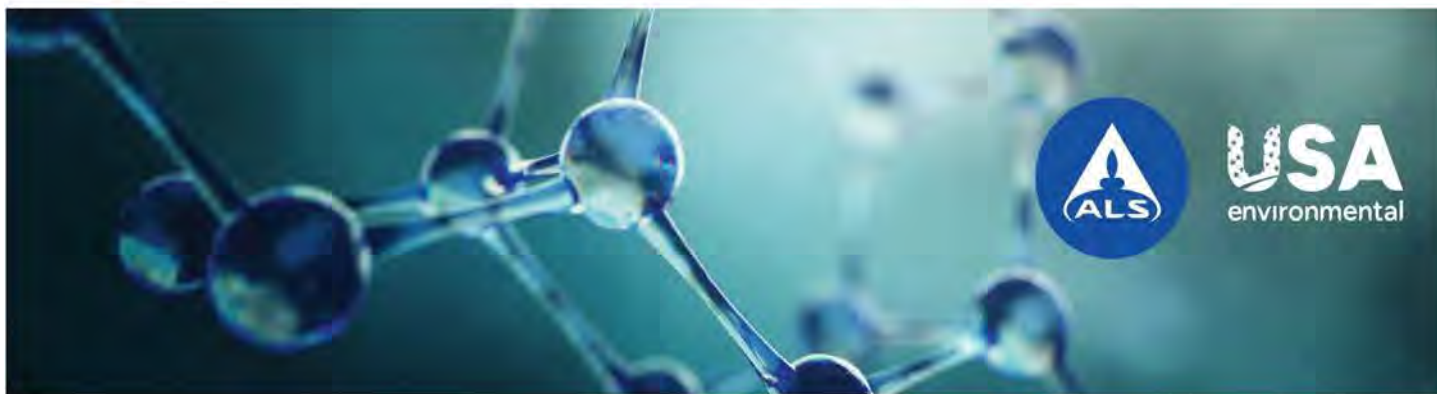
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Across

1. Formation of new crystals in a rock
5. Not the ninth planet
7. Planar arrangement of textural features
8. Mineral assemblage formed ~300-500°C
11. Nonrigid component of deformation
12. "It's not my ____"
13. "Sausage" in German
15. Minerals having the shape of an eye
17. Force per unit area
19. Zone of minerals surrounding a mineral
20. A product of hypervelocity impacts
22. Element 68
24. Collision of two planetary bodies
25. One's father
26. Soft layer between a vein and country rock
27. The third part of the ego and superego
28. Mineral precip. From hot aqueous fluid
29. Cracks, joints, and faults
30. Parting in a rock w/o shear displacement
31. Force exerted on a surface

Down

2. Rock composed of garnet and pyroxene
3. Minerals formed in lowest metamorphic grade
4. Steepening in otherwise uniform dip
6. A fold with youngest rocks at the core
9. State of physically touching
10. The ____ is on
14. Fabric development as a result of stress
16. A line showing similar temps and pressure
18. Large discordant plutonic bodies
21. Material blasted out of an impact crater
22. Uppermost depth zone of metamorphism
23. Any tabular body of rock



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From the President's Desk

This may be a shorter note this time around. I have been working long hours on an environmental response to a large diesel fuel release into a wetland following a train derailment. Fortunately, there were no injuries or fatalities, but you never really know what life can or will throw at you on a Friday afternoon.

I say this mostly because after the first nine 12–14-hour work days, I got to step away to travel to see long time, dear friends. The reason was celebratory in nature, but was a juxtaposition of emotions.

For those of you who may be associated with the Geology Department at Michigan Tech, the passing of Dr. William Rose and the retirement of Dr. John Gierke marked the bittersweet, yet celebratory occasion.

My first summer in the Upper Peninsula, freshly off quitting my middle school teaching job and accepting entrance to the Graduate School, Dr. Rose hired me to drive 15-passenger vans of teachers around the Keweenaw as he taught about the geology and the stories the rocks told. I quickly learned he had an enormous zest for life, his legendary iPod stacked with the most eclectic playlists, teaching, and all things geology and geohistory. His generosity, love of cooking a savage meal and telling stories around a fire after a sauna and a cold dip in Lake Superior made an invitation to spend the day on Silver Island a magical experience.

Previously though and prior to my arrival in the UP, I had been in contact with Dr. Gierke for some time. Acceptance to MTU's Graduate School to study geology without an undergraduate degree in geology was conditional on fulfilling required undergraduate courses. I had been teaching middle school Earth Science for a few years and had taken a few "Geology for Teachers" courses back in Ohio, but wanted to pursue a Master's degree. I knew little about what that actually meant, what I wanted to study, or how that would profoundly change my life at the time. Prior to my UP arrival, I vividly remember Dr. Gierke telling me, "if you can get yourself here, we'll figure it out and make it work" (or something to that extent, if not a direct quote).

Dr. Gierke was hired by Dr. Rose, so their history most definitely preceded any of my experiences; however, over the celebratory weekend a few weeks ago, previous students and colleagues told story after story that contained many of the same themes and lessons from their time at Michigan Tech. One of those revisited themes was that the two were instrumental in building a community within the Graduate School that is unlike any other most of us had ever experienced or have experienced since.

Here are a few other lessons or take-aways that I would like to share:

- Don't take life too seriously, it's important to enjoy life on a regular (not semi-regular) basis and be sure to live it up!

- All rocks have a story to tell, most people do too and if you listen you might learn something really important.
- Ask yourself if you are ready for a challenge, then make sure you are prepared for the challenge, maybe with some contingency planning along the way.
- Surround yourself with like-minded people and be as generous as you can.
- Whatever it is you enjoy or are passionate about, share that with others.
- And finally, take a chance on people.

For me, these are all personal lessons and reminders that I hold dear. They are lessons that I attribute to having known both. Both Dr. Rose and Dr. Gierke took a chance on a middle school science teacher who just wanted to be a geologist and I am forever grateful.

These things may or may not resonate with you. Most likely, you may think of a completely different situation that is relevant to your life's experiences when you read the above. But I hope it makes you think of someone in your life that has had such an influence on you, and you can identify your own lessons learned from them. You don't know who will walk into your life, even for a chapter, only to have a substantial and long-lasting impact. You also never know who might take inspiration or motivation from what you have to offer. Be on the look out!

I hope to see you at the Joint Meeting with MAEP on October 1.

All the best and take care,

Ashley E. Miller

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Please submit your draft article to the Editor, Adam Heft at: adam.heft@wsp.com. Technical requirements may be found on the AIPG website.



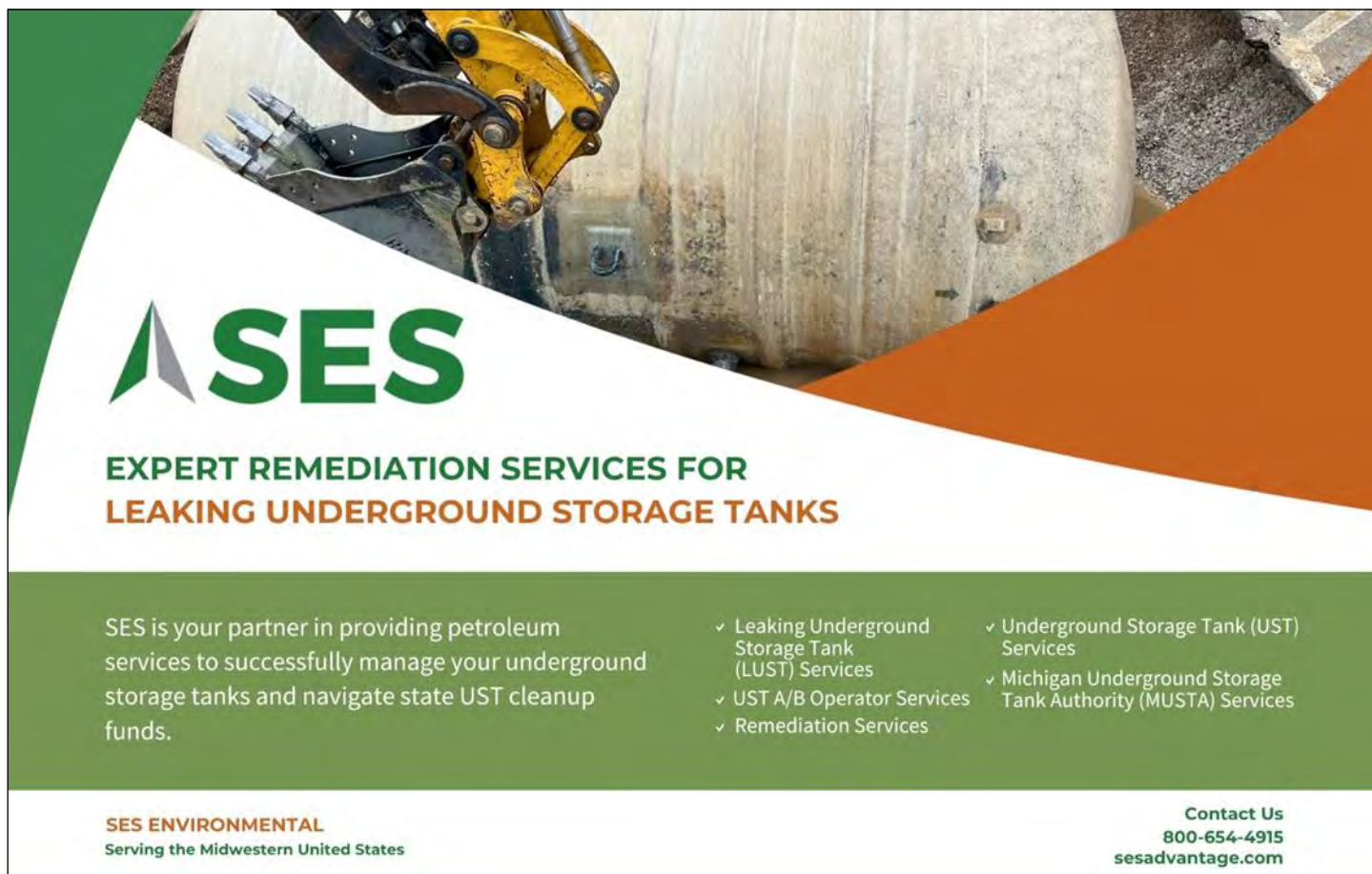
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Secretary's Report

The AIPG Michigan Section Executive Committee has met three times since the last edition of *Geologically Speaking* was released: in May, June and August. The executive committee did not meet and conduct any business in July due to lack of quorum.

In May, the Michigan Section ECP, Garrett Link, reported that the school year for Michigan Student Chapters had come to an end and students were asked to send in election results as well as contact information for the student officers for the 2025-2026 school year. The executive committee also further discussed the new and fully functioning Michigan Section webpage and coordinated with AIPG National to make the webpage live. A tentative schedule was revealed for the Michigan Section Field trip to the Soo Locks and information was sent out to the section the week of May 26th.

In June, the executive committee recapped the success of the Environmental Workshop held on June 10th and 11th and continued to discuss the Michigan Section Field Trip to the Soo Locks including getting the announcement and registration out to the section members. During this month, AIPG National approved the link to the new Michigan Section webpage which officially went live on June 12th. The executive committee also began planning upcoming dates and potential speakers and topics for the joint meeting with MAEP in September and the

Michigan Section Annual Meeting in December.

This past month in August, Karlee Foster officially transitioned into the role of ECP as an officer of the Michigan Section Executive Committee, replacing outgoing ECP member Garrett Link. Western Michigan University received the award for 2025 Student Chapter of the Year and Wayne State University and Eastern Michigan University received the award for Student Chapter of Excellence, which Karlee Foster has offered to present in person in the near future. Natalie Sorenson from Michigan Technological University was selected to receive the 2025 Andrew Mozola Memorial Scholarship from the Michigan Section. Michigan Section voted on and will also be sponsoring the MAEOE Conference taking place on October 3rd – 5th in Marquette, Michigan with an exhibition table. The executive committee discussed the success of the Michigan Section Field trip to the Soo Locks and continued planning the MAEP joint meeting and the Annual Meeting.

2025 Workshop Wrap Up

The 2025 Michigan Section AIPG Environmental Risk Management Workshop has come and gone. This year's theme was "Remediation, Risk Management & Closure. And as usual, the Workshop was held at the Ralph A. MacMullan Conference Center on beautiful Higgins Lake.

With a record turnout of about 300 participants, we stretched the facility's capacity. But fortunately, the staff were up to the challenge, and managed everything in a timely fashion without any significant problems. The food, as usual was good, and since the weather cooperated as it usually does (thanks to Sara's discussion with Mother Nature beforehand).

The quality of the talks was up to the usual high standard, with several participants claiming that they are on par with those they get at Battelle but at a much less expensive and more fun venue.

The Workshop organizing committee would like to extend a big Thank You! to everyone that helped make this

year's Workshop such a success. That includes all of the individuals who presented talks, were on the panel discussion, all attendees who came to learn, network, and problem solve with others, and of course, our sponsors and exhibitors! You will find ads from all of the companies that participated in the Workshop in this edition of *Geologically Speaking*. Please show them your appreciation by working with them wherever possible.

Next year's Workshop is already in the planning stages, and the date has been set for June 9-10, 2026. Plan on joining us for what is sure to be another great event! The Call for Abstracts will be out in November, so be sure to watch for it.



Photo taken from a drone approximately 30 feet above the level of Higgins Lake, slightly offshore from the picnic area at the RAM Center.



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2025 Andrew Mozola Scholarship

The 2025 Andrew Mozola Memorial Scholarship has been awarded to Natalie Sorensen, SA-11971, a Michigan Technological University student who just completed her third year of undergraduate studies.

The requirements of the Andrew Mozola Memorial Scholarship include the following:

- The applicant must be at least a Sophomore, enrolled in an accredited Michigan College or University.
- The applicant must be a student member of AIPG at the time of application,
- The applicant must have an overall GPA of 3.0 or better, and a 3.5 or better in geology

Applicants were asked to provide an application letter stating why they want to be a geoscientist, a letter of recommendation from a faculty member, and a copy of their transcripts.

So that our members can get to know Natalie a bit and also see the caliber of student receiving these scholarships, we have included her application letter below.

"My name is Natalie Sorensen. I just finished my third year at Michigan Technological University pursuing a degree in Geological Engineering and minor in Statistics. Exploring the outdoors was a key part of my life growing up. My family traveled around the United States to various parks which broadened my exposure to the geological wonders and sparked my interest in geology. I looked forward to these trips, but little did I know, these vacations would help guide me towards the geology field.

"During high school, I took engineering courses through a program called Project Lead The Way because of my interest in math, science, and problem solving. In my sophomore year of this class, we were required to find and research an engineering discipline we were interested in. I knew I wanted to pursue a career that revolved around the outdoors because of my love for nature along with my curiosity and appreciation of incredible geologic features that I visited during my vacations. Through this, I discovered the discipline of Geological Engineering. This career was a perfect fit for me in tying my interests in exploring geology along with the technical problem-solving engineering side. During my junior year of high school, I met Dr. John Gierke during a visit to Michigan Technological University. He helped me further understand the Geological Engineering field. Once he mentioned geohydrology, it piqued my interest even more. At the time, I was working on a water resources year-long project for my Project Lead the Way class. The aspects of water had already interested me and hearing that the aspects of water and geology could be combined into a future career made me even more excited about the field of geosciences.

"Throughout my time in college, I have gained extensive knowledge within the geoscience field. I often find myself talking with my friends and family endlessly about



Photo of Natalie Sorensen, recipient of the 2025 Andrew Mozola Scholarship. Photo taken from the MTU website honoring Natalie as an Outstanding GMES Scholar. Here is a link to that article: <https://blogs.mtu.edu/geo/2025/03/11/natalie-sorensen-recognized-as-outstanding-gmes-scholar-at-michigan-tech/>.

rocks and geological processes and formations that I have learned about. Ever since my first introductory geology class, I knew that I was on the right career path. Each class afterwards has cemented my love and interest in the geology field. This summer I will be applying my classroom knowledge in the Geology and Geophysics field camps. I look forward to working with my peers and gaining skills that I will be able to apply in my future career.

"Beyond the classroom, I have been involved with AIPG, research, and summer internships. This spring I was named the department scholar for the Geological and Mining Engineering and Science Department. The department scholar is awarded to a rising senior that represents scholarship in academics, research, and continued learning.

"The officers of the Michigan Tech AIPG club graduated in December which provided me the opportunity to step up into the secretary role for the remainder of the school year. My involvement included preparing meeting minutes, assisting with preparing the annual report, and recruitment and event planning for next year. I am the treasurer for Club Softball, so I was able to help the new treasurer learn the budgeting requirements.

"I have worked with both Dr. John Gierke for my first research project and I am currently working with Dr. Li. My first research project with Dr. Gierke, I compared data from a device that measures an area's hydrology to metrics measured by other existing devices. I tested the accuracy and reliability of a device that was new to the Geological and Mining Engineering and Sciences Department at Michigan Technological University. My research vali-

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dated this new device was reliable and it is now being used in El Salvador to monitor the hydrology of the farm fields. This device allows Dr. Gierke to see real-time data remotely. From this research, I was able to learn about different aspects of hydrology such as evapotranspiration, soil moisture content, and ways to measure precipitation. This past spring semester, I started working with Dr. Li on his research project on slow-moving landslides. Dr. Li has implemented a computational model that computes the velocity change of a slow-moving landslide based on geomechanical and hydrological coupling parameters. With my minor in statistics and knowledge from geosciences classes, I am using statistical analysis on this computational model to evaluate the sensitivity of involved geomechanical parameters. Additionally, I will evaluate the risk of slow-moving landslides with forecasted future rainfall conditions to determine the warning signals of intensity and slope velocity. This work with Dr. Li will continue next school year.

"Another opportunity I had was assisting Dr. Jeremy Shannon as the grader for the Structural Geology lab for the past 2 spring semesters. By being the grader for this class, I have been able to reinforce the concepts of Structural Geology and appreciate the hard work that professors put into their students' education.

"Last summer, I had a summer internship at G2 Consulting Group in Ann Arbor. I conducted quality control testing at construction sites. This work included concrete, bit density, and soil density at construction sites for roadways and buildings to verify that the material is in compliance with the engineering building standards. I received certification for this testing which included the Nuclear Moisture-Density Gauge. This internship taught me the importance of foundation and subsurface support for the roads and buildings that are used by many people everyday. With this, I gained an understanding of the importance of the ground and how the geology can affect the construction of a road or building. By having this ex-

perience, it also has allowed me to further my professional communication skills with coworkers and contractors.

"After I receive my undergraduate degree, I plan to pursue a master's degree in Geological Engineering with a concentration in geohydrology. This past semester I took Geohydrology and loved all of the aspects of the class especially the groundwater modeling aspect. I have always had a passion for water and making sure everyone has access to clean water. I would like to either focus on the aspect of water resources or remediation of contaminants that could impact our clean drinking water. The area of geotechnical engineering is another aspect of geosciences that I am interested in going into with the understanding of the interaction between soil and water and the impacts on buildings and people that it has.

"The Earth's natural resources are vital, key components for us to sustain everyday life. We need to make sure that these resources are preserved for future generations. People working in the geosciences field are the ones that will help make this possible and I want to be one of those people. As a Geological Engineer, I have the potential to help preserve our water resources, help mitigate environmental disasters or natural hazards, or other geological fields I am still learning about. My ultimate goal is to find a pathway where I can have a positive impact on the Earth and society for future generations.

"Thank you for considering me for this scholarship."

After the applications had been submitted and reviewed, and the scholarship committee notified the Natalie that she would be receiving the Mozola Scholarship for 2025,

"Thank you so much for selecting me to receive the 2025 Mozola Scholarship. I am honored to be selected for this scholarship. I look forward to continuing to be a member of AIPG as a student and then continuing on as a geosciences professional."

WMU is the AIPG Student Chapter of the Year—3rd Year Running!



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Did You Know?

This article is intended to remind members of various aspects of AIPG and benefits of membership. If there is something you would like to see featured in this column, please contact the Editor...

From Section 2.7 of the AIPG Bylaws...

2.7.4 Loss of Rights Granted Members or Adjuncts

Any Member or Adjunct who resigns, whose membership in the Institute is suspended, or who has been terminated shall lose all rights of Institute membership, including the right to claim AIPG certification and use the AIPG seal, if an as applicable.

2.7.5 Reinstatement of Suspended Members or Adjuncts

2.7.5.1 Reinstatement within the Same Calendar Year

Any person who has ceased to be a Member or Adjunct by suspension shall be eligible for reinstatement in the same calendar year upon written request and payment of all outstanding dues and obligations to the Institute and upon providing evidence satisfactory to the Executive Committee that the condition(s) upon which the suspension was based are no longer applicable. The Executive Committee may condition such reinstatement upon the payment of a reasonable reinstatement fee as provided herein in Article 8.2.3.

2.7.5.2 Reinstatement after One Calendar Year

Any person who has ceased to be a Member or Adjunct by resignation or termination "without prejudice"

shall be eligible for reinstatement upon written request by:

1. Updating his or her professional experience (resume) on the form prescribed by the Institute and other Member or Adjunct records.
2. Signing a statement that during the intervening period the individual has not been convicted of a felony and/or has not been subjected to discipline by a professional organization or licensing board and has not resigned from a professional organization or relinquished a professional license or registration in order to terminate a disciplinary proceeding.
3. Paying current year Institute and Section dues.
4. The Executive Committee may condition such reinstatement on the payment of a reasonable reinstatement fee.

2.7.5.3 In Cases of Termination "With Prejudice" or to Avoid Discipline

Any Member or Adjunct who has been terminated "with prejudice" may be readmitted only by reapplication to the Executive Committee. Such re-application cannot be made for at least six years following the effective date of termination (see AIPG's Disciplinary Procedures, Section 6.2.4). The re-application should include a thorough discussion of why the conduct that led to the termination "with prejudice" or avoidance of discipline by another professional organization and professional licensing body will not re-occur and why re-admission to AIPG Membership will not be detrimental to the Institute's reputation.

I Want To Publish Your Articles!



Hey everyone, I would like to encourage you to submit your articles for publication! As the Michigan Section Editor, and also the 2021-24 National Editor, I am working to put together two top-quality publications for our members. This is not a one person job. This is where you come in. I welcome your technical articles, case

studies, opinion pieces, mini field guides, and letters to the Editor.

The guidelines are pretty simple for articles for *Geologically Speaking*. All submissions must be professional and may not violate the AIPG code of ethics. They also may not have been submitted for publication elsewhere.

While most submissions will be accepted, we do not accept articles that are a sales pitch for a product or company.

The deadline for submitting articles for *TPG* is two months before the start of the quarter for which the *TPG* edition is published. Thus, February 1 is the deadline for the Apr/May/Jun edition.

Please submit your articles of no more than 3,200 words in MS Word format directly to me or to Dorothy Combs at National Headquarters at aipg@aipg.org. All graphics (photos, figures, or tables) should be submitted in .jpg, .tiff or other standard format at 300 dpi. Please ensure your graphics are clean and easy to read to make things easier for the editorial staff. Complete information on submitting an article may be found on National's website at: <https://aipg.org/page/TPGInformation>.



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Where in Michigan?

The January 2025 edition of *Geologically Speaking* featured a photograph of Pleistocene age tunnel valleys located near Cassopolis in Cass County. **Peter Rose** correctly identified the photograph and gets choice of swag!

This edition of *Geologically Speaking* features the same image as the previous issue **at right** - not the photo on the cover page; no one identified it (or even guessed), so we'll try again. **Hint:** the river is the Michigamme. The first person to correctly identify the location and what significant event occurred at this location will win AIPG swag! Submit your entry via email to the editor; only one per person per issue please.

Don't forget to check out the feature article "Geology in Michigan" in this issue (as well as the last several editions) that presents a geologic feature of interest as a mini field guide. One of the best parts about being a geologist is field trips, and we are hoping that in your travels around the state or country you include these featured spots as a stop. Why not incorporate them into a family vacation or bring friends who may not be geologists and share these locations that make Michigan unique? We hope you enjoy reading about it, and more importantly, go see it in person! We invite you to share unique geologic features that you know about and submit a "mini field guide" to share with our members in future editions.



Invitation to Our Members!

Do you have a case study to share?

The Michigan Section AIPG promotes knowledge sharing and would like to feature case studies from projects where others may benefit from successes as well as lessons learned. We feel as professionals that learning from each other is a great opportunity that AIPG offers our members. AIPG offers connection with other professionals and their experiences in the work we do every day. This case study represents what we would like to offer more to our members, not only as a way to solve problems, but unify us as professional geologists. Additionally, do you have a suggestion for other types of information to share that would be of interest to our membership?

Please send your case studies and suggestions for future publication in upcoming editions of *Geologically Speaking* to the Editor.

Update Your Information!

Please be sure that you continue to receive the Section's *Geologically Speaking* publication and other announcements. Submit an updated e-mail address to Adam Heft at adam.heft@wsp.com. If you move or change places of employment, don't forget to send your new contact information to both the Section and to National. If you are not receiving announcements directly from the Editor, it is because your email address is not up to date with the Michigan Section or because your IT group may classify it as junk or a bulk sending.

Please help the Editor by making sure that your email address doesn't bounce when the next announcement is sent. And be sure to cc National Headquarters at aipg@aipg.org when you update your contact information. Thank you!



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Students - Reminder

Don't Forget: Each Student Chapter must submit two articles for publication in *Geologically Speaking* each year to qualify for Section funding. Send the articles to Adam Heft at adam.heft@wsp.com.

Support our Sponsors!

The Section Executive Committee would like to remind its members to support the companies advertising in this publication. Consider working with these companies, and when you speak with their representatives, let them know that you saw their ad in the Michigan Section AIPG publication *Geologically Speaking*.

Interesting Geology Links

The Editor has received links to various interesting geology-related sites. Some of the more interesting links are included here. If you have any links to geology-related sites that you would like to share, please forward them (with a citation, if applicable) to the Editor.

Planet Geo podcast: <https://planetgeocast.com/>.

Geology Professor Shawn Willsey YouTube Channel: <https://www.youtube.com/@shawnwillsey>.

The AIPG YouTube Channel: <https://www.youtube.com/channel/UCZJVHi1yAPLJe1AksLOV3pA>.

Michigan Geological Survey (MGS) and resources from the Michigan Geological Repository for Research and Education (MGRRE) YouTube Channel. <https://www.youtube.com/@michigangeologicalsurvey/videos>.

USGS Earthquake Center: <https://earthquake.usgs.gov/earthquakes/map/?extent=23.20096,-130.16602&extent=50.95843,-59.85352>.

Section Website Reminders

The Michigan Section has created a database of geologic photographs on our website. Please submit photographs that you are willing to share to Adam Heft at adam.heft@wsp.com. Don't forget to include your name and a short explanation of what the photograph depicts. The photographs will be uploaded to the website periodically.

If you have suggestions on other items that should be included on the History page, please let a member of the Section Executive Committee know.



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PFAS Sampling: What the Labs Wish You Knew

By Noell DeStefano, PhD, National PFAS Sector Lead, Metiri Group

Per- and polyfluoroalkyl substances (PFAS) are some of the most closely watched contaminants in the field today, and some of the easiest to get wrong. As regulations evolve, the pressure on labs, clients, and field teams keeps building: ultra-low detection limits, fast turnaround times, and zero room for contamination of the samples.

That's a tall order, even for experienced teams. After reviewing thousands of PFAS data packages and watching plenty of sampling plans go sideways, I can say this with confidence: the cleanest results come from field crews who understand what happens after the cooler arrives. From method selection to final reporting, here's what geologists, project managers, and field leads need to know to keep their PFAS data clean, fast, and defensible.

Getting the Sampling Right: Method, Matrix, and What Happens When You Don't

There's no shortage of checklists for what not to bring into the field: no waterproof notebooks, no Teflon, no permanent markers. But even when those rules are followed, small decisions in the field can snowball into major problems once your sample hits the bench.

The biggest issues? They usually come down to mislabeling, method mismatches, or not disclosing what's really in the bottle.

Choosing the Right Method for the Matrix

One of the most common mistakes is a mismatch between the matrix and the method. Turbid or visibly dirty samples are sometimes submitted under EPA Method 537.1 or 533 - drinking water methods designed for clean, treated water from a distribution system. They're not validated for raw groundwater, surface water, stormwater, or any sample with significant particulate matter.

The result? Poor recovery, invalid data, or delays that could've been avoided with a different method. For anything other than finished drinking water, Method 1633A is usually the better fit. It's built for complex matrices and includes prep steps for solids, high concentrations, and hard-to-handle samples.

Understanding Turbidity and Its Consequences

Turbidity in aqueous samples doesn't just look messy. It can clog extraction cartridges, slow workflows, and trigger dilution steps that raise reporting limits. If you're sampling surface water, avoid stirring up sediment unless that's your target.

That said, some matrices, like landfill leachate, stormwater, or AFFF-impacted runoff, are naturally turbid. Since filtration isn't allowed under Method 1633A (PFAS can bind to particulates), labs often turn to whole-sample centrifugation. Solids and liquids are separated, extracted, and recombined to reflect the total PFAS load. Some

labs do this by default. Others charge for the added prep. Either way, dilution may still be needed to protect instruments or bring results into a quantifiable range.

The takeaway? Turbidity often forces extra prep and higher reporting limits. Knowing what that means for your data, especially when comparing clean vs. dirty sites, can help you set realistic expectations from the start.

When the Sample Isn't Really Water

Some samples arrive looking more like wet soil than water. These slurries often lack enough free liquid for aqueous preparation but are still labeled as drinking water. That mismatch can cause delays or trigger reruns. In these cases, labs typically apply Method 1633A's solid procedure, which uses solvent extraction to recover PFAS from the particulate fraction before continuing with the standard sample processing steps. It's designed specifically for this type of material. As a general rule, if the sample contains about one-third or more solids by volume, it's best to treat and label it as a solid.

The same applies to true solids, whether grab samples, homogenized cores, or wet basin scrapings. These should be clearly labeled as soil or sediment and packaged in appropriate containers, typically HDPE or polypropylene rather than glass or re-used bags.

Method 1633A also has minimum mass requirements (generally 5–10 grams dry weight). If the sample is mostly gravel or too small, extraction may not be possible. For layered materials, consult your lab about homogenization strategies to ensure representative results.

The takeaway: if the sample isn't water, label it accordingly. A clear description and accurate classification can prevent significant delays in analysis.

Get It Together Before You Go

Some of the most avoidable delays start before the first sample is collected. PFAS methods vary in required volumes, preservatives, bottle types, and QC needs. If you're missing any of it, you may be heading back to the site.

Before you leave, make sure your kit includes:

- The right number and type of bottles (with preservatives, if required)
- PFAS-free water for blanks (provided by the lab)
- Supplies for duplicates, blanks, MS/MSDs (if required)
- Sample labels, COC forms, and a pen
- Ice, baggies, and a cooler sized to hold all required containers plus enough ice to maintain the required



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storage temperature.

If you're new to PFAS sampling or using a method for the first time, your lab can likely provide a checklist. Ten minutes of prep up front can save you days of delay.

When the Basics Break Down

Even a well-collected sample can go sideways if the basics aren't covered. Common culprits include:

- Sample labels that don't match the COC
- Illegible or inconsistent IDs
- Bottles packed too loosely
- Missing preservatives
- Warm or poorly iced coolers
- COCs with missing or mismatched info

These issues slow down login and create unnecessary headaches. A few habits go a long way: match labels to forms, write clearly, pack bottles securely, and enclose the COC in a sealed bag with plenty of ice.

Clean data starts with a clean handoff.

What the Lab Sees (and What Slows Them Down)

Even with a solid plan, some samples still throw labs a curveball. Heavy sediment, unexpected concentrations, or mismatched methods can trigger extra prep, delays, or elevated reporting limits. Once the cooler arrives, the lab has to work with what's inside, not just the project plan. If the sample doesn't match the expectations set during set-up, the workflow shifts fast.

One common consequence? **Dilution.**

No one likes seeing a sea of "< RL" in a report, especially when raised reporting limits are to blame. But sometimes, dilution is the only path forward. If a sample is too concentrated or full of sediment, labs may dilute to protect instruments or bring results within calibration range. That raises reporting limits, which increases the chance of non-detects and can be frustrating when you're trying to distinguish between 2 ppt and 5 ppt.

Sometimes dilution can be avoided with better sampling technique, such as avoiding overfilling bottles and minimizing sediment disturbance when possible. Often, though, it's simply a matter of high-strength matrices. This refers to samples with high levels of solids, organic matter, salts, or other interfering substances. Examples include landfill leachate, post-storm runoff, and AFFF-impacted water, which rarely run clean and usually require dilution. In these cases, it's best to let the lab know ahead of time so they can plan for the extra processing.

Don't stress out over elevated RLs - dilution doesn't mean your data is invalid. In many cases, it's the only way to

get accurate, quantifiable results. Understanding how matrix effects translate to reporting limits helps you interpret non-detects and explain them with confidence. More importantly, it helps you set realistic expectations, from the proposal stage to the final report, and avoid scrambling when results come in.

Field and Lab Teams Shouldn't Be Strangers

Some of the most avoidable problems don't come from the field or the lab, they come from the space between. A crew might collect samples perfectly but forget to share critical context. A lab might prep for drinking water and receive stormwater from a fire training site.

The fix is simple: talk early. Before kits go out or boots hit the ground, share the site matrix, expected concentration range, and anything unusual about the samples. If you're working with high-strength runoff, borderline solids, or complex discharges, that context helps the lab plan the right prep approach and anticipate any necessary modifications.

Just as important, early communication gives the lab a chance to flag potential challenges like how matrix effects might trigger dilution, impact reporting limits, or require additional prep steps. These are much easier to address before the cooler arrives than after.

A quick exchange up front ensures both sides are aligned on containers, preservatives, methods, and expectations so your results move forward without unnecessary delays or surprises.

Final Thoughts

PFAS sampling isn't hard because it's complicated. It's hard because it's exacting. A few small missteps can derail a solid plan.

The good news? Most issues are preventable. With a little planning, clear labeling, and early communication, field teams and labs can work as a true unit.

In PFAS work, clarity is power. Use it to your advantage.

Noelle DeStefano, Ph.D.

National PFAS Sector Lead, Metiri Group

Author Bio: Noelle is an environmental analytical chemist with over a decade of experience in PFAS method development, laboratory operations, and data review. She leads PFAS strategy and client support at Metiri Group, helping bridge the gap between field sampling and defensible laboratory results. Her background includes high-resolution mass spectrometry, regulatory compliance, and training teams on best practices for emerging contaminants.



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That Sinking Feeling: Karst Features in Northeast Lower Michigan

By Allan Blaske, CPG-10529

Sinkholes. Earth cracks. Swallow holes. Collapse valleys. What!?!

Karst features are abundant in northeast lower Michigan but are little known to the public or even most geologists, unless you seek them out. Although there are more than 200 sinkholes in Michigan's northern lower peninsula, most are located on private property and are therefore not accessible. Two areas, however, are easily accessible to the public, and offer an excellent example of these unique features.

I finally made the trip to visit these features in July

2024, after a long residence on my list of things to do. It was well worth the wait, as the two sites provide an excellent opportunity to view these unique features in Michigan. The sinkholes are large and impressive, and the features at Mystery Valley are equally remarkable. The visit makes a good day trip from Lower Michigan, but I would have liked more time to visit and explore some other sites in the area.

These two areas, the Stevens Twin and Bruski Sink Preserve and the Mystery Valley Karst Preserve, are owned by the Michigan Karst Conservancy (MKC) and are open for visiting and examination. The Mystery Valley



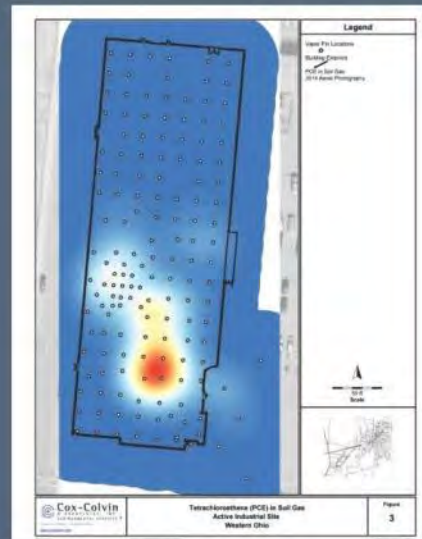
Figure 1: The location of the two karst areas in relation to Alpena.

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Preserve is co-owned by the Michigan Nature Association. The MKC is a nonprofit organization dedicated to the acquisition, management and protection of Michigan's significant karst areas and features, as well as scientific study and conservation education. MKC volunteers perform trail maintenance and mowing monthly to keep up the excellent trail system at the two sites. While I am not a member of the MKC, I greatly appreciate the dedication and mission of this group. When I visited the preserves in July 2024, Tyrone Black (former DEQ/EGLE employee and AIPG member) was at the site with three other volunteers doing trail maintenance. Thanks Ty!

Location and Directions

To visit the two preserves, begin in Alpena (Figure 1, preceding page). The Stevens Twin Sinks and Bruski Sink are located in Alpena County, and the Mystery Valley in Presque Isle County. Directions to the sites from Alpena are as follows:

The Stevens Twin and Bruski Sinks are located approximately eight miles north of the intersection of Michigan Highway 32 (M-32) and M-65. From Alpena, at the intersection of US-23 and M-32 (3rd Avenue in downtown Alpena), drive west on M-32 for 14 miles to M-65. Turn right (north) onto M-65 and drive 4.5 miles. Keep left onto Leer Road as M-65 bends to the east. Continue onto Leer Road and drive north for four miles. Watch for the signs and a small parking area for Bruski Sink on the right

(east) side of the road. The entrance to Stevens Twin Sinks is immediately adjacent on the west side of the road. Latitude and longitude coordinates for the entrance area of Bruski Sink and Stevens Twin Sinks are 45° 10' 57" N, 83° 43' 11" W.

The Mystery Valley Preserve is approximately 2.2 miles to the north-northwest from the Stevens Twin and Bruski Sinks. Drive north on Leer Road for one mile and turn left (follow pavement) onto Carr Road. Follow Carr Road west for one mile and turn right (north) onto Leer Road. Follow Leer Road north for 0.75 miles, and the gate to Mystery Valley is on the right. Latitude and longitude coordinates for the entrance gate at Mystery Valley Preserve are 45° 12' 32" N, 83° 44' 20" W.

Description

The MKC maintains trails around the sinkholes in this preserve, allowing for a casual hike around the sinkholes and a self-guided investigation. The Bruski Sink is located approximately 875 feet to the northeast of the Stevens Twin Sinks. Figure 2 illustrates the sinkholes on a topographic map. Bruski Sink is a single sinkhole, while the Stevens Twin Sinks are two sinkholes separated by a narrow ridge. The sinkholes at the Stevens Twin and Bruski Sinks preserve are each approximately 250 to 300 feet in diameter, roughly circular, and approximately 100 feet deep. The sinkholes have steep walls with exposed bedrock. Because of the size and depth, it is difficult to



Figure 2: USGS topographic map of Bruski and Stevens Twin Sinks. Note the additional sinkholes in the surrounding area, and the near perpendicular orientation of the sinkhole groups, suggesting development of the sinkholes along joint patterns in the bedrock.



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get a representative photograph. From the perimeter trails, you can catch glimpses of the size and depth of the sinkholes through the trees which line the walls and cover the floor. Entry into the sinkholes themselves is not allowed (for obvious reasons!).



Figure 3: Trail at Stevens Twin Sinks. This section of the trail follows the ridge between the two sinkholes. Note the steep sides of the sinkholes on either side of the trail, and the orientation of trees indicating movement toward the center of the sinkholes on either side of the trail.

Bruski Sink is surrounded by a perimeter trail around the top edge of the sinkhole. The Stevens Twin Sinks are

surrounded by a perimeter trail, as well as a trail which also traverses the ridge between the sinkholes (Figure 3). Note the narrow trail along the ridge, the steep sloping walls, and the leaning cedar trees on the sinkhole slopes. An additional trail spur takes one to earth cracks, and a nature trail loops through a forested area surrounding the sinkholes.

Mystery Valley contains one of the largest karst “collapse valleys” in the Great Lakes region, several large earth cracks, and a lake that rises, falls, and sometimes disappears. The valley itself is 1.5 miles long, 1,500 feet wide, and about 500 feet deep (Figure 4). It was formed by the collapse of the ground surface into subterranean chambers created by the dissolution of the rock below. The trail system within the Mystery Valley preserve is marked with interpretive posts, with an explanation provided in a brochure available at the entrance (or online). This trail passes a swallow hole (a hole where water disappears into the ground) before arriving at the earth cracks. A series of large earth cracks can be seen, which are several hundred feet long and up to 15 feet deep (Figure 5). These cracks indicate slumping of the ground surface toward the valley as subsidence continues and are readily apparent on a Digital Elevation Model (DEM) of the ground surface (Figure 6).

Continuing along the trail and down into the valley, you arrive at the bottom of the valley itself. Looking

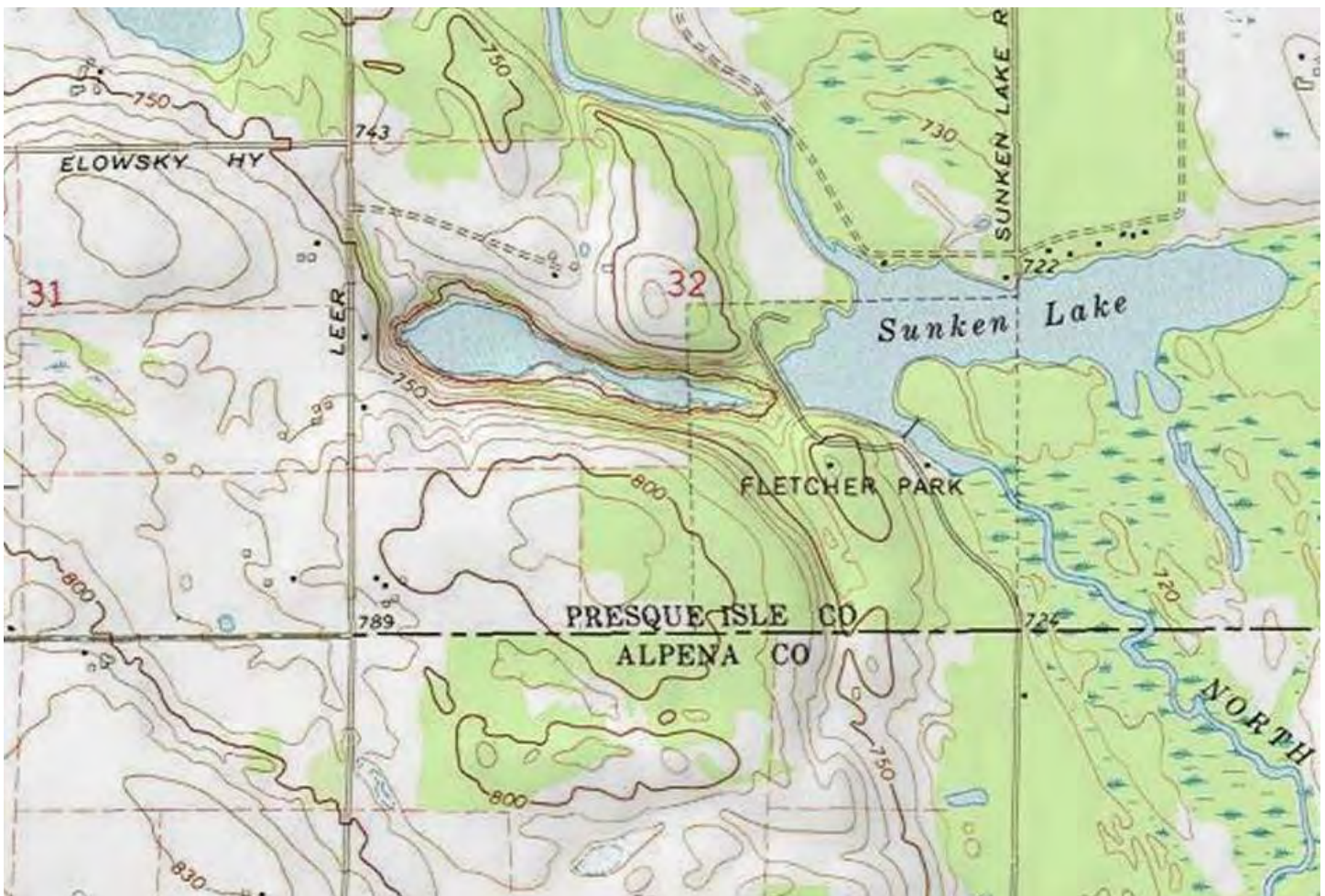


Figure 4: USGS topographic map of the Mystery Valley. This particular version of the map indicates a lake filling the valley. Note the steep sides of the sinkhole valley, and “Sunken Lake” to the east, likely a continuation of the karst features !



Figure 5: Earth crack at the Mystery Valley Preserve. This crack is 10 to 15 feet deep, and more than 100 feet long!

across the valley (Figure 7) you can see the sinkhole rim and exposed bedrock on the northwest corner. When we visited in July 2024, the valley did not contain any water. However, the valley periodically contains a lake which rises, falls, and sometimes disappears. The lake that forms in the valley comes from subsurface water entering through a sinkhole at the west end of the valley. Depending on subsurface hydrology and blockages within the passageways, the lake fills and then drains back through the sinkhole and disappears. A whirlpool has been known to form over the sinkhole during draining.

Geology and Formation

What causes the karst features? As geologists we all know that sinkholes are formed by the dissolution of soluble bedrock beneath the surface, allowing caverns to form, which eventually collapse. The bedrock at the surface at the Stevens Twin and Bruski Sinks and Mystery Valley is limestone of the Traverse Group (Middle Devonian in age). The cover of glacial material is very thin, mostly less than 20 feet thick. Below the Traverse Group, at depths of approximately 700 to 800 feet, is the Detroit River Group. The limestones and dolostones of the Detroit River Group contain layers of anhydrite and gypsum. These minerals dissolve much more readily than limestone. Dissolution of these layers in the Detroit River Group rocks creates caverns, and the overlying rocks collapse, forming the sinkholes. Evidence pointing to the dissolution of the Detroit River Group evaporite rocks shows up where the water returns to the surface. At large, submerged sinkholes in Lake Huron, 20 miles to the east, the resurgent water has been shown to be saturated with gypsum. The grouping of the Stevens Twin and Bruski Sinks indicate they are aligned along joint trends in the rock. Water has worked its way along joints and cracks in the limestone to reach the underlying evaporites. Several other sinkholes are located in the area of the Stevens Twin and Bruski Sinks (Figure 2), and the orientation of

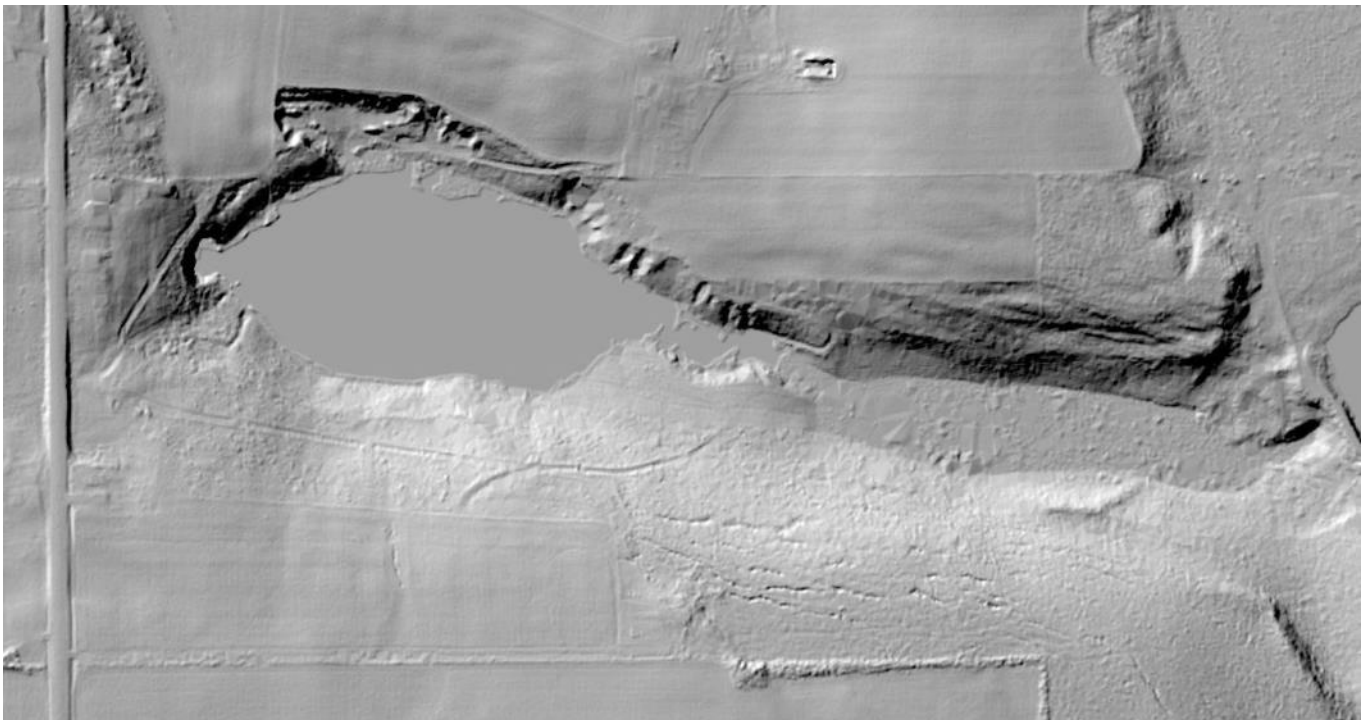


Figure 6: Digital elevation model of the Mystery Valley. Note the steep sides of the valley and earth cracks visible in the area south of the valley. The northern side of the valley shows slump features and collapse in the northwest corner.



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the sinkholes in this group is along a near perpendicular joint set. The Mystery Valley, a collapse valley, formed in the same way, and is a large, elongated sinkhole.

The sinkholes are not filled with the glacial drift which covers the bedrock elsewhere in the surrounding area. This indicates they have grown deeper after the final retreat of the continental glaciers. The sinkholes are active and continue to grow. Earth cracks at both locations are caused by slumping of the rock as the layers beneath continue to erode away.

Summary

I've had these features on my list for quite some time and finally spent a day trip to visit them. I was quite impressed by the size of the sinkholes and earth cracks, as well as the accessibility afforded by the MKC trails. These features are easy to get to, easy to hike around, and provide an exceptional look at some unique and underexplored features within Michigan. As the weather turns warmer and winter turns to spring and eventually summer, I encourage you to add these two sites to your



Figure 7: View across Mystery Valley in July 2024, looking to the west-northwest from the trail. The valley was dry during our visit, but exposed bedrock at the active sinkhole and swallow hole can be seen across the valley. Without a mowed trail, we did not venture to the other side of the valley.

Other Karst Features

Other karst features are present in the area, and at least two locations can be visited. Additional sinkholes can be observed at the Sinkhole Pathway, within a part of Onaway State Park, near the Shoepac Lake State Forest Campground, 12 miles southeast of Onaway in southwest Presque Isle County. This trail encircles five adjoining sinkholes and includes a stairway into one of the sinkholes. Another location to observe karst features is near Ocqueoc Falls. At a location approximately 1.6 miles northeast of Ocqueoc Falls, a portion of the Little Ocqueoc River disappears underground before re-emerging downstream. This area is located approximately 10 miles east of Onaway. Unfortunately, during my trip in the summer of 2024, I didn't have time to visit these two features, so they are on the list for the next trip.

excursion list. If you have never been to these features before, you will not be disappointed!

AIPG Headquarters has a New Address!

On May 10, 2025, AIPG headquarters moved to a new location. The new address is:

10701 Melody Drive, Suite 630
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The phone numbers and email addresses for all office staff remain the same.



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Locks, Rocks, and Good Company in Michigan's Eastern U.P.

By Sara Pearson, CPG-10650

We, the Michigan Basin Geological Society (MBGS) and the American Institute of Professional Geologists (AIPG) Michigan Section, came together for a joint summer field trip to Michigan's eastern Upper Peninsula, July 18–20, 2025. Friday night kicked off the weekend at Soo Brewing Company, where we caught up with old friends, met new colleagues, and enjoyed great company before diving into a weekend of geology, engineering, and U.P. culture. On Saturday, thanks to arrangements made by Adam Heft with AIPG, the U.S. Army Corps of Engineers (USACE) gave us the geologist's tour version of the new Soo Lock under construction — a once-in-a-lifetime experience. The Soo Locks are a linchpin for the national economy, allowing 1,000-foot freighters carrying iron ore to pass between Lake Superior and the lower Great Lakes. With only the aging Poe Lock currently capable of handling these vessels, a new lock is vital. After a histori-

cal presentation, we toured the construction site (see cover page photo), where freshly cut walls revealed the beautiful Jacobsville Sandstone, complete with bedding, ripple marks, and stories of its ancient depositional environment. AIPG and MBGS thank the USACE team who led the tour: Kenneth "Tres" Henn, PG, Carrie Fox, and their team.

We didn't just focus on the locks — we also soaked in the U.P.'s cultural flavor (including pasties, of course) and enjoyed the camaraderie of our fellow geoscientists. Led by John Esch from MBGS and the Michigan Geological Survey (MGS), and assisted by Chris Christenson, a member of both MBGS and AIPG, we explored the Paleozoic geology of the eastern U.P., visiting the MDOT CORS GPS Station tracking glacial isostatic adjustment, the Barbeau remolded drumlins, and the Neebish Island Rock Cut Spoils. A highlight was watching a freighter pass through the Soo Locks while eating lunch at Soo



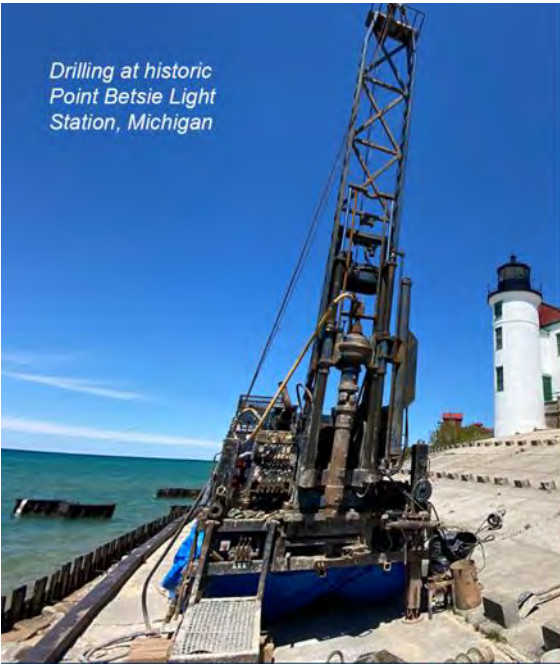
Photo 1: John Esch of the MGS and MBGS member, demonstrating the passive seismic equipment.



Photo 2: The Biscuit Creek swallow hole, into which the stream flows and disappears from the surface.

Locks Park — and later in the day, seeing that very same freighter again as it moved through the channel at Neebish Island. We examined Chippewa Lake clays, shoreline levels of Glacial Lakes Nipissing and Algonquin, the Niagaran Escarpment's Engadine Dolomite, and saw a demonstration of the Horizontal-to-Vertical Spectral Ratio (HVSr) passive seismic method for mapping drift thickness and bedrock depth (Photo 1, at left).

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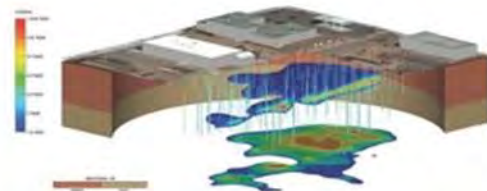
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Photo 3: The Biscuit Creek reemergence location. At the time of our visit, only a small pool of water remained. The stream normally flows down the stream channel towards the back of the photograph.

This trip was about more than seeing rocks and structures — it was about connecting past and present, and building connections within our professional community and geology enthusiasts. From the karst features of the Biscuit Sinkhole and Biscuit Spring Sinkhole (where a disappearing spring may resurface) to the last stops at the Eastern and Caffey Corners Quarries, we experienced how geology shapes both natural landscapes and human use. At the quarry, the Fiborn Limestone offered fossils, dissolution cracks, and a look at how local stone supports industries far beyond the U.P.

We left with a deeper appreciation for how Michigan's geologic story is tied to its economy, infrastructure, and communities. By experiencing the Soo Locks, Paleozoic formations, glacial landscapes, and karst features



Photo 4: The Fiborn Limestone with coral fossils exposed at the surface in Graymont's Eastern Quarry.

firsthand — and by enjoying the company of our fellow associates — we strengthened both our scientific knowledge and our professional connections, making this trip as memorable for the people as it was for the rocks.

Member's Corner

The Member's Corner includes information about the Section's membership. This is your chance to provide information on where you are and what you are doing. Simply send the information to the Editor for inclusion in this section.

This installment introduces you to our new Early Career Professional Board Member, Karlee Foster...

I am a geologist and graduated from Eastern Michigan University (EMU) in 2022 with a Bachelor's in Science in Professional Geology with a concentration in Hydrogeology. During my time at EMU, I was an active member of the EMU AIPG Student Chapter / GeoClub and was the President in the 2020/2021 school year. I am currently working towards becoming a professional geologist (PG) in Indiana through the Association of State Boards of Geology (ASBOG). Since graduating, I have remained associated with AIPG and now hold the Early Career Profes-

sional (ECP) position for the AIPG Michigan Section for the 2025/2026 academic year.

Attending AIPG professional meetings helped me gain an internship with an environmental consulting firm while finishing my last term at EMU. Upon graduation, I was offered a full-time position as an environmental consultant. Currently I am an environmental consultant and geologist with Trinity Consultants and specialize in subsurface investigations which can include drilling oversight, soil logging, and soil vapor monitoring. Additionally, I have worked on environmental remediation projects such as ion exchange resin PFAS treatment and permeable reactive barriers for volatile organic compound treatment.

As AIPG has opened several opportunities for myself as a student and beyond, I am enthusiastic to take on the role of the AIPG Michigan ECP for the upcoming school year to help bring similar opportunities to current students.

Coming Events

September 20-21, 2025: Livingston Gem and Mineral Society's Rockhound Dream Show, Hartland Educational Support Service Center, 9525 E Highland Road, Howell, Michigan.

September 26-28, 2025: Western Michigan University Geological & Environmental Sciences Department 60th Anniversary Diamond Jubilee. Complete details at: <https://events.blackthorn.io/en/111VGoT7/q/N07Z82597C/geosciences-diamond-jubilee-weekend-4a6oRQ9Tlx/overview>.

September 27-28, 2025: Flint Rock & Gem Show, Crossroads Village, 6140 North Bray Road, Clio, Michigan.

October 1, 2025: Joint Michigan Section AIPG/MAEP meeting. The meeting is to be held at Waldenwoods in Howell, Michigan. Speaker and topic TBA. Look for an announcement flyer with registration information in the coming weeks.

October 4-7, 2025: 62nd AIPG Annual Meeting, St. Louis, Missouri. Registration is open at: [2025 National Conference - American Institute of Professional Geologists](#).

October 17-19, 2025: Central Michigan Annual Gem, Mineral, Fossil, Lapidary & Jewelry Show, Ingham County Fairgrounds Main Arena, 700 Ash Street, Mason, MI.

November 1-2, 2025: MMRC Annual Show, Chippewa Nature Center, 400 S Badour Road, Midland, Michigan.

December 4, 2025: Michigan Section AIPG Annual Meet-

ing. Details forthcoming; meeting to be held at Webers Inn, Ann Arbor.

January 28-February 15, 2026: 71st Tucson Gem & Mineral Show: "Red, White, & Blue—Celebrate the Spirit of Minerals!" theme. Details at: <https://www.tgms.org/show>.

May 2026: Kalamazoo Rock, Gem, Fossil & Mineral Show. Kalamazoo County Expo Center, 2900 Lake Street, Kalamazoo, Michigan.

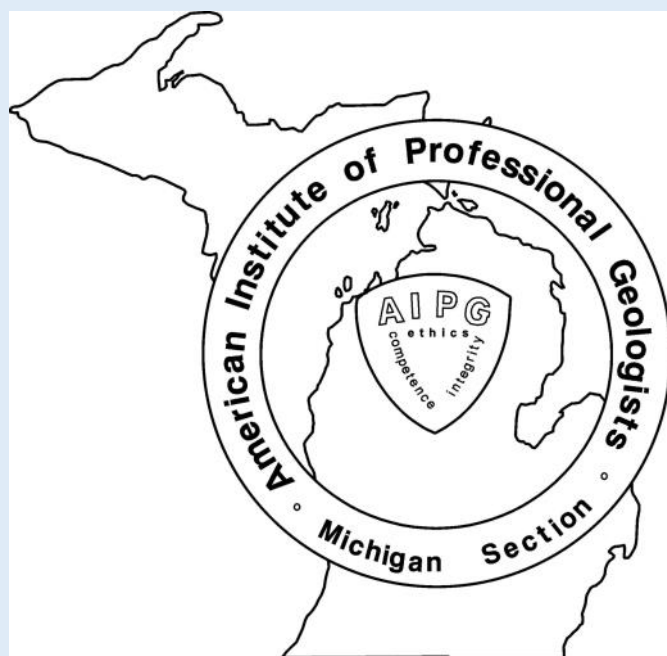


Welcome New Members!

The Michigan Section is continuing to grow. Please welcome the following new CPGs, Professional Members, Early Career Professionals, Associate Members, and Students:

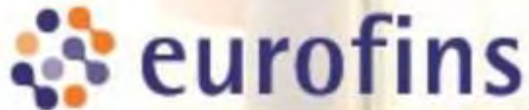
Coreena Crummel, SA-12823; Marlayna MacKay, SA-12824; Priyanka Dhamala, SA-12815; Hayden Gough, SA-12825; Peggy Straub, AS-0229; Jacob Sutherland, AS-0230; Jakob Szilagyi, MEM-3796; Christopher Robinson, SA-12868; Ryan Galdikas, SA-12882; and Katelyn Smith, ECP-1235.

To each of our new members, welcome to our Section! We encourage you to attend Section meetings and other events. You are also invited to provide information for the Member's Corner articles so that our members can get to know you.



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Regulatory Roundup

This regulatory roundup provides an overview of legislative and regulatory activities in or may affect Michigan that may be of interest to our membership. This summary is intended to help members stay informed about developments and to provide context for engaging in the legislative process. We encourage you to lend your knowledge and experience to help policy makers and communities make more informed decisions.

Federal Legislative and Regulatory Actions

Significant federal-level changes were made during this period, particularly by the U.S. Environmental Protection Agency (EPA) and the Department of Energy (DOE), which could impact geoscience and environmental work in Michigan.

- **EPA Rule Changes:** The EPA proposed to repeal all greenhouse gas (GHG) emissions standards for the power sector under the Clean Air Act. The agency also announced plans to revise wastewater discharge rules for power plants and to again revise the definition of "Waters of the United States" (WOTUS), citing a need to reduce regulatory complexity. Additionally, the EPA is reconsidering restrictions on perchloroethylene (PCE), a chemical linked to groundwater contamination.
- **PFAS Policy:** The EPA announced its intent to extend compliance deadlines for drinking water standards for PFOA and PFOS until 2031 and to rescind regulations for other PFAS compounds. These changes are aimed at providing more flexibility to water systems, with the EPA stating its commitment to a "PFAS OUTreach Initiative" to provide funding and technical assistance.
- **Mineral Production and Mapping:** The Trump administration issued an Executive Order to increase domestic mineral production. This order expands the definition of "critical minerals" to include uranium, copper, potash, and gold, and directs federal agencies to prioritize mineral production on federal lands to streamline the permitting process. In support of this, the U.S. Geological Survey (USGS) has been conducting airborne geophysical surveys and other mapping initiatives across the country, including in Michigan's Upper Peninsula, as part of the **Earth Mapping Resources Initiative (Earth MRI)** to identify undiscovered critical mineral resources.
- **Small Modular Reactors (SMRs):** The U.S. De-

partment of Energy reissued a **\$900 million funding solicitation** for SMRs, removing the requirement for Community Benefits Plans and prioritizing regulatory streamlining. This aligns with a series of Executive Orders aimed at accelerating the licensing process for new nuclear reactors and strengthening the nuclear industrial base.

- **NEPA Reforms:** The U.S. Department of Agriculture revised its National Environmental Policy Act (NEPA) regulations to reduce what it described as "unnecessary red tape" and to streamline environmental reviews for projects.
- **Supreme Court and NEPA:** The U.S. Supreme Court issued a major decision in *Seven County Infrastructure Coalition v. Eagle County* that significantly limits the scope of environmental reviews under NEPA. The ruling states that federal agencies are only required to consider a project's direct impacts, not indirect effects or those from geographically separate projects. It also emphasizes that courts should give "substantial deference" to an agency's determination of the scope of its environmental review.

State-Level: Energy and Geologic Resources

A number of bills in both the House and Senate address energy policy, particularly regarding renewable and alternative energy sources and their relationship with local zoning.

- House Bills **HB 4027** (Alexander) and **HB 4028** (Alexander) would repeal the state's ability to preempt local zoning decisions for large-scale solar, wind, and energy storage facilities. Both bills were received in the Senate and referred to the Government Operations Committee in early May.
- Similarly, Senate Bills **SB 322** (Hoitenga) and **SB 323** (Nesbitt) propose to reverse energy waste reduction and electrification standards and Michigan Public Service Commission (MPSC) certification standards that preempt local zoning. They were introduced in May.
- Other related bills include **HB 4590** (Markkanen), which would require the MPSC to promulgate rules for community solar facilities, and **HB 4709** (DeBoer), which would prohibit the construction of wind turbines in the Great Lakes. Both were referred to the House Government Operations Com-

mittee in late July.

- Another bill, **HB 4283** (Prestin), would authorize the use of electricity from RICE (Reciprocating Internal Combustion Engine) generators to meet renewable and clean energy standards. This bill was received in the Senate and referred to the Government Operations Committee in May.

A package of bills was introduced to support the advanced nuclear energy sector.

- House Bills **HB 4124** (Wendzel) and **HB 4128** (VanWoerkom) would provide corporate income tax credits for advanced small modular reactor (SMR) research and generated power. Both were reported in the House in late March.
- Companion bills, **HB 4125** (McFall) and **HB 4126** (Steckloff), would create and fund a nuclear and hydrogen education grant program.
- **HB 4127** (Thompson) would provide a formal definition of advanced nuclear reactors, and **HB 4129** (Andrews) would create an employment incentives program for nuclear and hydrogen graduates.

Several bills also directly address subsurface resources.

- House Bills **HB 4274** and **HB 4275** (Kunse) are a pair of bills that would make mineral rights acquired by certain foreign entities subject to forfeiture and would prohibit their acquisition. Both were introduced in March and referred to the House Government Operations Committee.
- The carbon capture and sequestration bills, **SB 394** (Cherry), **SB 395** (Bellino), and **SB 396** (McCann), were the subject of a Senate committee hearing in June. Supporters of the legislation point to economic and emissions benefits, while environmental groups have raised concerns about potential public health risks. These groups have advocated for additional safeguards, such as requiring groundwater monitoring, establishing emergency water access plans, and mandating advanced modeling of potential pipeline ruptures.
- Another bill for the oil and gas sector, **SB 140** (Irwin), would increase the fee for monitoring, administration, and enforcement of gas and oil wells.
- **HB 4085** (Posthumus) would amend zoning laws to allow for cryptocurrency mining in industrially zoned areas, a process that can have a large energy footprint.

Environmental and Water Issues

The legislature addressed a wide range of environmental topics, including water and air pollution, waste management, and emerging contaminants.

- **Water Quality and Groundwater Protection:** Several bills address groundwater and water pollution. **HB 4192** (VanWoerkom) and the companion **HB 4193** (Snyder) propose to modify groundwater discharge permit requirements for mobile home parks and campgrounds. Both have been received in the Senate or had committee hearings. **HB 4035** (Wozniak) would modify violations for sewer overflows, with potential fines of up to \$1 million per month. **HB 4364** (Robinson) would modify application requirements for new or increased discharge permits, while **HB 4365** (St. Germaine) and **HB 4366** (DeBoyer) would provide penalties and modified sentencing guidelines for certain water discharges. In addition, **HB 4636** (Morgan) and **SB 392** (Moss) would require groundwater contamination cleanups to meet residential and safe drinking water standards unless technically infeasible. **HB 4427** (St. Germaine) would require a "brown alert" to be issued when dangerous levels of E. coli or sewage are detected. A new bill, **HB 4385** (Andrews), would authorize the use of temporary erosion control structures, like sandbags, without a permit during high water levels on shorelands. Finally, Senate Bills **SB 61** and **SB 62** (Hoitenga) address lead in water by exempting child care centers and schools that do not test positive for lead from certain filtration system installation requirements.
- **Waste and Pollution:** The legislature is also considering waste and pollution issues. **HB 4299** (Foreman) and **SB 195** (Shink) would repeal the state act that preempts local regulations on plastic bags and other containers. **HB 4257** (Neyer) and **HB 4265** (Andrews) would work together to provide definitions and regulatory standards for anaerobic digesters. **HB 4389** (Wegela) and **SB 247** (Camilleri) propose a disposal fee for injection wells, while **HB 4393** (Miller) and **SB 246** (Camilleri) propose to increase landfill disposal fees and limit certain disposal wells. **HB 4411** (Green, P.) would provide for cost recovery for the removal of damaged vehicles and debris. A new bill, **SB 26** (Klinefelt), would remove a reference to the fire protection fund in the Natural Resources and Environmental Protection Act.
- **Air Quality and Emerging Contaminants:** There were also bills related to air quality and new environmental concerns. **HB 4304** (Smit) would prohibit the dispersion of substances to affect weather. **SB**

141 (Irwin) would require the control or capture of methane and VOCs from oil or gas wells. Finally, the growing issue of microplastics is addressed in **HB 4767** (Mentzer) and **SB 505** (Shink), which would establish a Michigan statewide microplastics strategy.

- **EGLE News & Activities:** The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has been active with several key events this summer. In August, EGLE opened a public comment period and scheduled a public meeting for a hazardous waste management facility operating license for **Wayne Disposal, Inc.** The department also released an updated **Michigan Risk-Based Corrective Action (MIRBCA)** Technical Guidance document and reporting forms for sites with leaking underground storage tanks (LUST), which takes effect on October 1. Additionally, EGLE announced a public comment period for the **Line 5 permit application** in July, released new data on the **Gelman 1,4-dioxane groundwater plume**, and held a public hearing for an **air permit** for a nonmetallic mineral crusher.

Land Use and Policy

Several bills were introduced to modify land use and development policies, which can have significant impacts on environmental and geological considerations.

- **HB 4081** (DeBoyer) and **SB 23** (Hertel) are companion bills that would authorize counties and municipalities to increase the number of parcels resulting from a land division.
- **SB 16** (Daley) would allow for the relinquishment of up to one acre of farmland from an agricultural conservation easement if it would make boundaries more regular.
- **HB 4118** (Schuette) would provide for special assessments for drain construction to be levied against Department of Natural Resources (DNR) lands.
- **SB 273** (Daley) would reauthorize the funding mechanism for the Michigan Agricultural Environmental Assurance Program (MAEAP).

UP Copper Mine Funding Reconsidered

Michigan lawmakers are again considering a **\$50 million taxpayer-funded grant** to support a copper mine in the western Upper Peninsula. The proposed **Copperwood Mine** has generated both local support for its potential economic benefits and opposition from environmental groups who cite potential risks to the Porcupine Mountains and Lake Superior. The new funding request is

currently pending in the legislature.

Other Relevant Legislation

- **EGLE and DNR Appropriations:** The appropriations bills for EGLE and the Department of Natural Resources (DNR) are moving forward in both the House and Senate. **SB 181** (Irwin) for EGLE passed the Senate and was received by the House Appropriations Committee, while **HB 4568** (Cavitt) was introduced in the House. Similarly, **SB 172** (Cherry) provides appropriations for the DNR, and **HB 4392** (Borton) provides appropriations from the Natural Resources Trust Fund. **SB 63** (Hoitenga) also relates to the Trust Fund, modifying recipients to include state departments.
- **Warrants:** House Bill **HB 4421** (Kunse) would require EGLE officials to obtain a statutory warrant or the consent of the property owner before entering private property.
- **Natural Gas:** Companion bills, **HB 4486** (Frisbie) and **SB 275** (Bellino), would prohibit local governments from banning the use of natural gas or the installation of new natural gas infrastructure. Both are in their respective Government Operations Committees.
- **Aviation Fuel:** Two bills providing credit for the use of sustainable aviation fuel, **HB 4424** (Neyer) and **SB 235** (Singh), saw progress. **SB 236** (Bellino) would also create a sustainable aviation fuel incentive program.
- **Tax & Utilities:** **SB 435** (Singh) passed the Senate and was referred to the House Government Operations Committee. **SB 477** (Camilleri) was introduced in July to provide for the establishment of microgrids, and **HB 4526** (Wortz) seeks to revise the process for challenging utility projects.
- **DNR Leadership:** A Senate Joint Resolution, SJR C (Theis), proposes a constitutional amendment to allow for the election of the DNR Director.

Sources and Additional Information

- **Federal Actions:**
 - **EPA & DOE Policy:** [NZero Article on EPA Policy Revisions](#)
 - **DOE SMR Funding:** [Pillsbury Law Article on DOE Funding for Small Modular Reactors](#)
 - **NEPA & Mineral Production Executive Orders:** [White & Case LLP Article on Executive Order to Increase Mineral Production](#)

- **WOTUS & Groundwater:** [Circle of Blue Article on Federal Water Tap](#)
- **PFAS Policy:** [Thompson Hine LLP Article on Federal PFAS Regulation](#)
- **USGS Earth MRI:** [USGS Earth Mapping Resources Initiative News](#)
- **Supreme Court NEPA Ruling:** [Baker Donelson Article on the Supreme Court's NEPA Decision](#)
- **Michigan Legislation:**
 - **HB 4027 & HB 4028:** [Michigan House Bill 4028 Legislative Analysis](#)
 - **HB 4283:** Michigan House Bill 4283 Legislative Analysis
 - **HB 4124, HB 4125, HB 4126, HB 4127, HB 4128, HB 4129:** [Michigan House Bills 4124-4129 Legislative Analysis](#)
 - **HB 4274 & HB 4275:** [MI HB4274 on Michigan-Votes](#)
 - **SB 394, SB 395, SB 396:** [Gongwer Michigan Report on Carbon Capture](#)
 - **HB 4085:** [MI HB4085 on TrackBill](#)
 - **HB 4192 & HB 4193:** [Michigan House Bill 4192 Legislative Analysis](#)
 - **HB 4035:** [MI House Republicans Press Release on HB 4035](#)
 - **HB 4299 & SB 195:** [Michigan House Democrats Press Release on Plastic Bag Bans](#)
- **HB 4257 & HB 4265:** [Michigan House Democrats Press Release on Anaerobic Digesters](#)
- **HB 4081 & SB 23:** [Michigan House Bill 4081 Legislative Analysis](#)
- **UP Copper Mine Funding:** [Bridge Michigan article on the Copperwood Mine](#)
- **EGLE Activities:**
 - **Wayne Disposal, Inc. Public Hearing:** [Public Notice from EGLE on Intent to Issue a Hazardous Waste License](#)
 - **MIRBCA Technical Guidance:** [Michigan Risk-Based Corrective Action \(MIRBCA\) Technical Guidance Document](#)
 - **Enbridge Line 5 Permit Application:** [EGLE news release on public comment period](#)
 - **Gelman 1,4-Dioxane Plume:** [Michigan Public article on toxic chemicals in Scio Township](#)
 - **Bell Site Public Hearing Recording:** [YouTube video of the public hearing for Bell Site Development](#)



Michigan legislative bill [search](#)



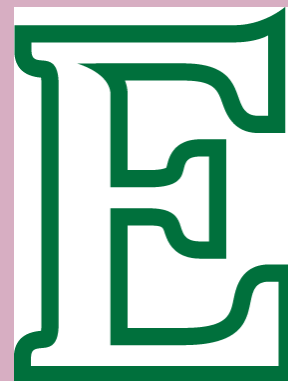
Michigan Administrative Code Rulemaking System [search](#).

WSU and EMU Student Chapters Receive Student Chapter Award for Excellence!



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ASBOG Exams

The ASBOG Fundamentals of Geology (FG) and Practice of Geology (PG) Examinations are administered using Computer Based Testing (CBT). All examinees must be certified to take the examination at an approved Prometric/Iso-Quality Testing (IQT) facility. Multiple testing centers are located throughout Michigan. Central Michigan University (CMU) qualifies candidates to take the FG examination in Michigan and surrounding states.

The FG and PG exams are given in March and October each year. **The next scheduled examination dates are Thursday, October 2nd and Friday, October 3rd, 2025.** Two days will be available this October to accommodate the anticipated demand.

There are three fees for taking the FG examination: \$50 CMU administration fee, \$200 ASBOG examination fee, and \$75 Prometric testing center seat fee. **For October, the deadline to apply through CMU is August 15th.**

Complete information on applying to take the FG exam is available at se.cmich.edu/asbog. Useful information to help prepare for the FG Exam can be found in the ASBOG Candidate Handbook, which is accessible on the [ASBOG website](https://www.asbog.org).

Member Input Sought

The Section Executive Committee is seeking input from members on a variety of topics. Do you have any suggestions regarding speakers/presentation topics that you would like to hear? What about field trips or other events? Some place you'd like to see us go, or something you think the membership would enjoy doing? Then

make your voice heard; please send your suggestions to one of the members of the Executive Committee; any of the seven members would be glad to hear from you. AIPG is your organization. Please help keep it relevant and interesting for all by participating.



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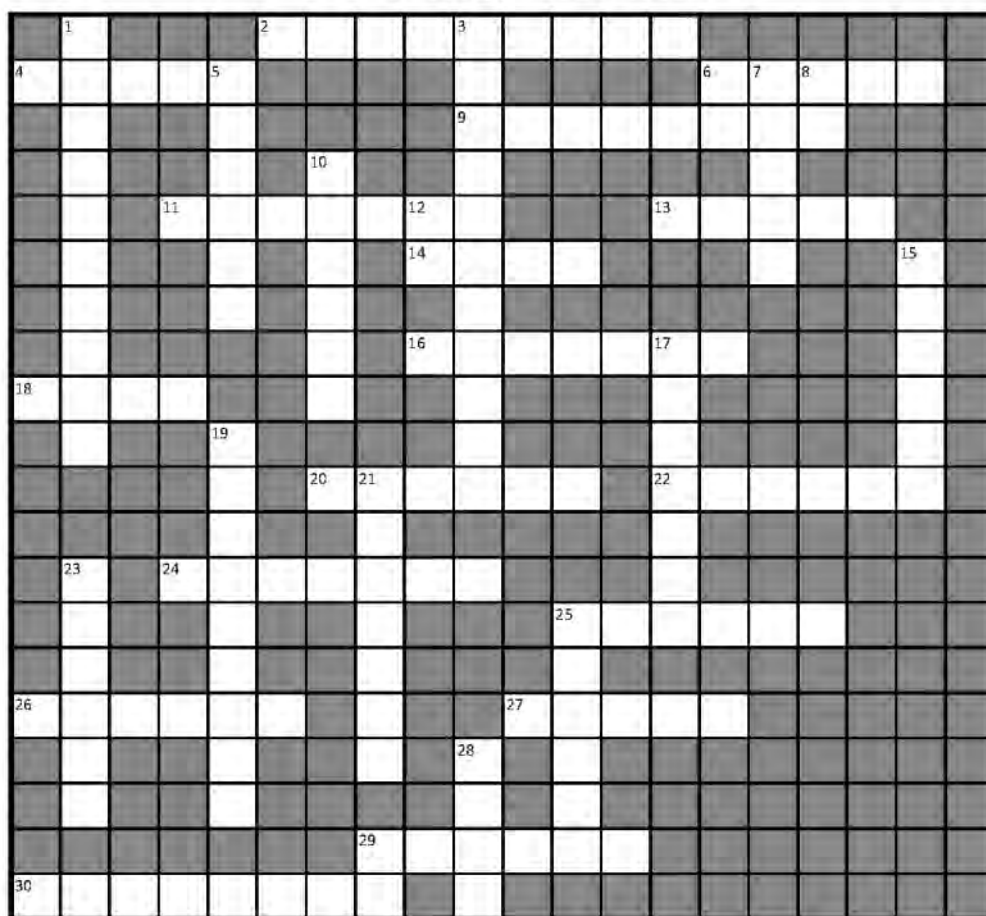
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Geology Crossword #22



Across

2. Not a Cobbler
4. Produced first map of ocean floor
6. German Quaternary Geologist
9. Doctor, mayor, state geologist
11. Proposed continental drift theory
13. Known for Uniformitarianism
14. Creator of the hardness scale
16. First chief geologist of USGS
18. First director of the USGS
20. Studied Mount Desert Island
22. Founder of modern geology
24. Discovered the solid inner core
25. Known for Theory of Evolution
26. Female Canadian Devonian expert
27. Introduced idea of stratification
29. Pioneering female paleontologist
30. English theologian, geologist, paleontologist

Down

1. Founded Journal of Geology
3. Identified discontinuity below crust
5. 2nd Director of USGS
6. Extraterrestrial
7. Known for a reaction series
8. Half an em
10. Founded the Neptunist school
12. Unit of measure equal to height of type size
15. 1871 Geological Survey of Yellowstone
17. Developed seismic magnitude scale
19. Discovered discontinuity below mantle
21. Known for data gathering and analysis
23. Founder and first President of MIT
28. Pioneered studies of mountain building
29. Anno domini

*The solution to this geology crossword will be included in the next edition of *Geologically Speaking*.

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